

### **Remarks**

Claims 10-29 are pending. Favorable reconsideration is respectfully requested.

New claims 22-24 have been added to more particularly point out and distinctly claim certain preferred embodiments of the present invention. Support may be found on page 9, lines 36-38 and page 10, lines 18-20. No new matter has been added.

The claimed invention is directed to foamable mixtures containing prepolymers which have from 50-99% of their chain ends terminated by reactive alkoxysilyl groups, the remainder being groups of the formula [2]. It has been very surprisingly found that such prepolymers are highly compatible with hydrocarbon blowing agents, being free from separation into multiple phases or resistant thereto, and easily re-homogenized upon simple shaking when separation does occur. Even more surprisingly, when foamed, the subject invention foams show less propensity to form cracks, even though the number of moisture-curable silicon-bonded alkoxy groups is reduced due to the termination by the A<sup>1</sup>-R<sup>1</sup> groups, thus decreasing the molecular weight and crosslink density which could otherwise be obtained.

The claims have been rejected for obviousness-type double patenting over *Stanjek et al.* U.S. Application Serial No. 10/468,633 (U.S. Published Application 2004/0072921 A1), and under 35 U.S.C. § 102(b) over its PCT equivalent *Stanjek et al.* published PCT Application WO 02/066532 A1, which is discussed in the specification on page 6. Applicants respectfully traverse these rejections.

The claims indicate that only 50-99% of the terminal groups of the prepolymer are reactive alkoxysilyl groups. Thus, 1-<50% are not reactive alkoxysilyl groups. The presence of unreactive chain termination is necessary to achieve the benefits of the claimed invention. Only methoxy groups, ethoxy groups, and  $\omega$ -oxyalkylalkyl radicals are sufficiently reactive with moisture to cure to a foam.

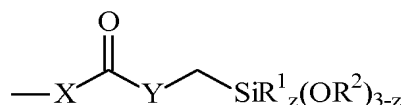
*Stanjek* (U.S. and WO) discloses highly reactive prepolymer, moisture-curable foam systems wherein all prepolymer terminal groups are reactive alkoxysilyl groups, spaced from an electronegative atom or group of atoms by an intervening methylene group. The presence of the methylene group as a spacer in lieu of the conventional propylene group results in enormously high reactivity with water, resulting in very rapid cure in the presence of atmospheric moisture (humidity). However, as indicated by the comparative examples herein, such prepolymers suffer from the defects that their compatibility with hydrocarbon blowing agents is very limited, and that the foams are subject to the formation of cracks. The compatibility with blowing agents is critical, as these one-component systems are supplied in pressurized containers with blowing agent, and once separation into a multi-phasic mixture occurs, re-homogenization is extremely difficult, and in the field (during use), generally impossible.

In the subject invention, in contrast to *Stanjek*, only a portion of the prepolymer termini are reactive alkoxysilyl groups. The remainder are groups of the formula  $-A^1-R^1$ . These groups allow for compatibility with blowing agents and reduce or eliminate cracking as well.

It is clear from the specification, addressed to one of ordinary skill in the art, that the  $-A^1-R^1$  terminal groups are not the same as the reactive alkoxysilyl groups. In formulating the rejection for obviousness-type double patenting over the *Stanjek* U.S. published application and for anticipation over the *Stanjek* published PCT application, the Office has adopted a strained construction of the  $-A^1-R^1$  terminal groups which is contrary to how one skilled in the art would view the disclosure and claims.

The Office indicates that if  $A^1$  is O (oxygen) and the oxygen is bound directly to a silicon atom, that the result is reactive alkoxysilyl group.

However, first, regardless of whether this construction would be acceptable to one of ordinary skill in the art, such compounds are neither disclosed nor suggested by *Stanjek*. In *Stanjek*, the terminal groups are



where  $\text{R}^1$  is a hydrocarbon radical,  $\text{R}^2$  is methoxy, ethoxy, or  $\text{C}_{2-10}$   $\omega$ -oxyalkylalkyl, and  $z$  is 0 or 1. Thus,  $3-z$ , the number of reactive alkoxy groups, must be  $3-0=3$  or  $3-1=2$ . *Stanjek* does not disclose, nor does he teach or suggest any prepolymers with but one alkoxy group. The reason is that *Stanjek's* purpose was to achieve high reactivity and a high level of crosslinking so that the foams would cure in minimal time, actually more rapidly than one-component polyurethane foams bearing isocyanate groups. Alkoxysilyl groups bearing two or three alkoxy groups such as methoxy or ethoxy groups are highly reactive since each is an electron withdrawing group which drains electron density from the silicon atom to which they are attached. Each alkoxy group increases the reactivity of its silicon-bonded neighbor alkoxy groups. A single alkoxy group is not only far less reactive for this reason, but also cannot result in a high crosslink density. Therefore, *Stanjek* did not disclose the use of such compounds, and their use is clearly non-obvious over *Stanjek*. Moreover, since *Stanjek* does not disclose the use of such groups, the claims are not anticipated by the *Stanjek* PCT published application.

Moreover, if the terminal groups  $-\text{A}^1-\text{R}^1$ , which are present in 1-50% of the chain termini, were reactive alkoxysilyl groups, then the total of reactive alkoxysilyl groups would not be the 50-99% required by the claims, i.e., partial reactive termination, but would be 100%, the same as proposed by *Stanjek*. Thus, the interpretation posed by the Office is not compatible with the claim language.

For the reasons expressed above, withdrawal of both rejections of the claims over the two equivalent *Stanjek* references is respectfully solicited.

Separately with regard to claim 11, the only reactive alkoxy groups disclosed by *Stanjek* are methoxy, ethoxy, and  $\text{C}_{2-10}$  oxyalkylalkyl groups ( $-\text{OR}^2$ ). Claim 11 requires  $\text{R}^1$  to be an alkyl or alkenyl group having 8-26 carbon atoms. Such groups are not moisture curable. In fact, stable aqueous dispersions with long shelf life can be prepared from silanes and siloxanes

containing such groups. *Stanjek* does not disclose, nor does he teach or suggest use of such groups. New claim 29 is similar in this respect, requiring R<sup>1</sup> to be a C<sub>10-18</sub> alkyl or alkenyl group.

New claim 22 requires, when A<sup>1</sup> is O, that the O is part of a urethane group, thus eliminating the possibility that it can be attached directly to silicon. Thus, -A<sup>1</sup>-R<sup>1</sup> cannot be a silicon-bonded alkoxy group.

Applicants submit that the claims are now in condition for Allowance, and respectfully request a Notice to that effect. If the Examiner believes that further discussion will advance the prosecution of the Application, the Examiner is highly encouraged to telephone Applicants' attorney at the number given below.

Please charge any fees or credit any overpayments as a result of the filing of this paper to our Deposit Account No. 02-3978.

Respectfully submitted,  
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